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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/611,507	06/30/2003	Michael E. Badding	SP03-079	2157

22928 7590 03/22/2006

CORNING INCORPORATED
SP-TI-3-1
CORNING, NY 14831

EXAMINER	
WALKER, KEITH D	

ART UNIT	PAPER NUMBER
1745	

DATE MAILED: 03/22/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/611,507	BADDING ET AL.	
	Examiner	Art Unit	
	Keith Walker	1745	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *17 January 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-25* is/are pending in the application.

4a) Of the above claim(s) *1-9 and 17-22* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *10-16 and 23-25* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Remarks

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 1/17/06 has been entered.

Claims 1-25 are pending in the application and claims 1-9 and 17-22 are withdrawn. Claims 10-16 and 23-25 are pending examination.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 23 & 24 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter, which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The specification does not support the limitation of claim 23, where the electrolyte has an "ohmic resistance of no more than 0.5 ohm-cm^2." The ohmic resistance is described in the description as being ohm/cm^2.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

1. Claims 10-16 & 23-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent Publication 2001/0044043 (Badding) in view of US Patent 4,272,353 (Lawrance).

Regarding claims 10-14, 16 & 23, Badding teaches a yttria-stabilized zirconia electrolyte for use in a solid oxide fuel cell ([0003] & [0004]). The electrolyte is flexible and has a thickness of 5-20 microns ([0042]). Possible doping oxides for the electrolyte are selected from the group of Y, Ce, Ca, Mg, Sc, Nd, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb, Lu, In, Ti, Sn, Nb, Ta, Mo, and W and mixtures thereof ([0044]).

While Badding further teaches the use of varying the sheet thickness by roughening up the electrolyte surface to improve the adhesion, he is silent as to the thickness variations and the pre-determined pattern.

For claims 10, 15 & 25, Lawrence also teaches roughening up the surface of the electrolyte to improve the adhesion. An average depth of groove from 4-10 microns varies the thickness of the electrolyte (6:65-68). A pre-determined crosshatched pattern is produced on the electrolyte surface (12:5-10).

The motivation to use the roughened surface with the electrolyte is to provide a better adhesive surface for the electrolyte.

Therefore it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the roughened electrolyte of Badding with the electrolyte of varying thickness to improve the adhesive property of the electrolyte and improve the connection between the electrode and the electrolyte.

Furthermore, the ohmic resistance of the electrolytic sheet is an inherent characteristic of the materials and design. Since the electrolytic sheet is made from the same materials and has the same features as the instant claims, the electrolytic sheet as taught by Badding in view of Lawrence would have an equivalent ohmic resistance as applicant.

2. Claims 10-16 & 23-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent Publication 2003/0180602 (Finn).

Regarding claims 10-15, 23 & 24, Finn teaches a solid oxide fuel cell with a textured electrolyte made with yttria-stabilized zirconia ceramic. The surface has a plurality of protrusions having a height less than 5% the average thickness of the electrolyte. The surface roughness is 0.5 – 2.5 microns, which gives an average electrolyte thickness of 10 – 50 microns ([0175] & [0177]). A predetermined pattern is used to texture the electrolyte sheet (Figs 13, 15, 16; [0186]).

Regarding claim 16 & 23-24, since the electrolyte layer is made from the same material and has the same thickness and features, it is inherent that it would have the same flexible property and an equivalent ohmic resistance as applicant.

The precise combination of a thickness variation of at least 2 microns and an average thickness between 3 and 30 microns is not taught. With a height variation of less than 5% as taught by Finn and a thickness variation of 2 microns as required by the claim, the average thickness of the electrolytic sheet is 40 microns. However, both the surface roughness and the thickness of the electrolyte sheet taught by Finn encompass the claimed parameters of the instant application and it would be obvious to one skilled in the art to optimize the thickness of the sheet to balance the resistance of the sheet with the strength of the sheet and to optimize the surface roughness to promote the best adhesion characteristics. Discovery of optimum of result effective variable in known process is ordinarily within the skill of art. Claimed ranges of a result effective variable, which do not overlap the prior art ranges, are unpatentable unless they produce a new and unexpected result, which is different in kind and not merely in degree from the results of the prior art (MPEP 2144.08).

Response to Arguments

Applicant's arguments with respect to the rejections of claims 10-16 & 23-25 under Badding in view of Lawrence have been considered but are moot in view of the new ground(s) of rejection due to the amendments.

Applicant's arguments, filed 11/21/05, with respect to the rejection(s) of claim(s) 10-16, 23 & 24 under Finn have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Finn.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Keith Walker whose telephone number is 571-272-3458. The examiner can normally be reached on Mon. - Fri. 8am - 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

KW

PATRICK JOSEPH RYAN
SUPERVISORY PATENT EXAMINER